Lipstick comprising a block polymer

The present invention relates to a cosmetic lip makeup composition comprising a particular block polymer.

Lipstick compositions are commonly used to give the lips an aesthetic colour. These makeup products generally contain fatty phases such as waxes and oils, pigments and/or fillers and optionally additives, for instance cosmetic or dermatological active agents.

When these compositions are applied to the lips, they have the drawback of transferring, i.e. of becoming at least partly deposited, and leaving marks, on certain supports with which they may come into contact and especially a glass, a cup, a cigarette, an item of clothing or the skin. This results in poor staying power of the applied film, making it necessary to regularly repeat the application of the lipstick composition. Moreover, the lip makeup result may also be impaired during contact with liquids, especially water or drinks consumed during a meal, for example, or alternatively oils, for instance dietary oils or alternatively sebum or saliva.

Lip makeup compositions that form a deposit that has good staying power on contact with the liquids brought into contact with the makeup, especially during a meal, are thus sought.

The aim of the present invention is to

provide a novel route for formulating a cosmetic lip makeup product, which make it possible to obtain good staying power properties of the makeup.

The inventors have discovered that it is possible to obtain such a composition by using a particular block polymer as described hereinbelow. The composition makes it possible to obtain a deposit on the lips, which has good resistance properties, in particular resistance after coming into contact with water or with a dietary oil.

One subject of the present invention is thus, more specifically, a cosmetic composition for making up the lips (or lipstick) comprising at least one cosmetically acceptable organic liquid medium and at least one film-forming linear block ethylenic polymer as described hereinbelow, the composition especially being as defined hereinbelow.

Advantageously, according to a first embodiment of the composition according to the invention, the film-forming linear block ethylenic polymer is free of styrene and is such that, when it is present in sufficient amount in the composition, the said composition is capable of forming a deposit that has a resistive index of greater than or equal to 80%.

Advantageously, according to a second embodiment of the composition according to the invention, the film-forming linear block ethylenic polymer is non-elastomeric and is such that when it is

present in sufficient amount in the composition, the said composition is capable of forming a deposit that has a resistive index of greater than or equal to 80%.

A subject of the invention is also a cosmetic process for making up the lips, comprising the application to the lips of a composition as defined above.

A subject of the invention is also the use of a composition as defined above, to obtain a deposit of makeup on the lips that has good resistance, in particular good resistance after coming into contact with water or with a dietary oil.

A subject of the invention is also the use of a block polymer as defined above, in a composition for making up the lips, comprising a cosmetically acceptable organic liquid medium, to obtain a makeup for the lips that has good resistance, in particular good resisance after coming into contact with water or with a dietary oil.

Advantageously, the linear film-forming block ethylenic polymer used in the composition according to the invention is such that, when it is present in sufficient amount in the composition, the said composition is capable of forming a deposit that has a resist index of greater than or equal to 80%, preferably greater than or equal to 85%, preferably less than or equal to 90% and preferably greater than or equal to 95%.

The resistive index of the deposit obtained with the composition according to the invention is determined according to the measuring protocol described below.

A support (40 mm × 70 mm rectangle) consisting of an acrylic coating (hypoallergenic acrylic adhesive on polyethylene film sold under the name Blenderme ref FH5000-55113 by the company 3M Santé) bonded onto a layer of polyethylene foam that is adhesive on the face opposite that onto which the adhesive plaster is applied (layer of foam sold under the name RE40X70EP3 from the company Joint Technique Lyonnais Ind) is prepared.

The colour $L^*_0a^*_0b^*_0$ of the support, on the acrylic coating side, is measured using a Minolta CR 300 colorimeter.

The support thus prepared is preheated on a hotplate maintained at a temperature of 40°C so that the surface of the support is maintained at a temperature of 33°C ± 1°C.

While leaving the support on the hotplate, the composition is applied to the entire non-adhesive surface of the support (i.e. to the surface of the acrylic coating), spreading it out with a brush to obtain a deposit of about 15 µm of the composition, and it is then left to dry for 10 minutes.

After drying, the colour L*a*b* of the film thus obtained is measured.

The difference in colour ΔE1 between the colour of the film relative to the colour of the plain support is then determined by means of the following relationship.

$$\Delta E1 = \sqrt{(L^*-L_0^*)^2+(a^*-a_0^*)^2+(b^*-b_0^*)^2}$$

The support is then bonded via its adhesive face (adhesive face of the layer of foam) to an anvil with a diameter of 20 mm and equipped with a screw pitch. A sample of the support/deposit assembly is then cut out using a punch 18 mm in diameter. The anvil is then screwed onto a press (Statif Manuel Imada SV-2 from the company Someco) equipped with a tensile testing machine (Imada DPS-20 from the company Someco).

A strip 33 mm wide and 29.7 cm long is drawn on a sheet of white photocopying paper with a basis weight of 80 g/m^2, a first line is drawn 2 cm from the edge of the sheet, and a second line is then drawn 5 cm from the edge of the sheet, the first and second lines thus delimiting a box on the strip; a first mark and a second mark located in the strip at reference positions 8 cm and 16 cm, respectively, from the second line are then made. 20 µl of water are placed on the first mark and 10 µl of refined sunflower oil (sold by the company Lesieur) are placed on the second mark.

The white paper is placed on the base of the press and the sample placed on the box of the strip of

paper is then pressed at a pressure of about 300 g/cm^2 exerted for 30 seconds. The press is then moved and the sample is repositioned just after the second line (i.e. next to the box), a pressure of about 300 g/cm^2 is again exerted, and the paper is moved, in a rectilinear manner once the contact has been made, at a speed of 1 cm/s, over the entire length of the strip such that the sample passes through the deposits of water and of oil.

After removing the sample, some of the deposit has become transferred onto the paper. The colour L^{*1}, a^{*1}, b^{*1} of the deposit remaining on the sample is then measured.

The difference in colour $\Delta E2$ between the colour of the deposit which has remained on the test specimen relative to the colour of the plain support are then determined by means of the following relationship.

$$\Delta E2 = \sqrt{(L^{*\prime}-L_0^{*\prime})^2+(a^{*\prime}-a_0^{*\prime})^2+(b^{*\prime}-b_0^{*\prime})^2}$$

The resistive index of the composition, expressed as a percentage, is equal to the ratio:

$$100 \times \Delta E2/\Delta E1$$

The measurement is performed on 6 supports in succession and the transfer value corresponds to the mean of the 6 measurements obtained with the 6

supports.

The term "organic liquid" means any non-aqueous product that is liquid at room temperature (25°C).

The term "cosmetically acceptable organic liquid medium" means a medium comprising at least one organic compound that is liquid at room temperature (25°C) and atmospheric pressure (10^5 Pa), which is compatible with keratin materials, especially the skin or the lips, such as the organic solvents and oils commonly used in cosmetic compositions.

The composition according to the invention may comprise a styrene-free film-forming linear block ethylenic block polymer.

The term "styrene-free polymer" means a polymer comprising less than 10%, preferably less than 5%, preferably less than 2% and more preferably less than 1%, or even containing no, styrene monomer such as styrene or styrene derivatives, for instance methylstyrene, chlorostyrene or chloromethylstyrene.

According to one embodiment, the block polymer of the composition according to the invention is derived from aliphatic ethylenic monomers. The term "aliphatic monomer" means a monomer comprising no aromatic groups.

The term "ethylenic polymer" means a polymer obtained by polymerization of monomers comprising an ethylenic unsaturation.

The term "block polymer" means a polymer comprising at least two different blocks and preferably at least three different blocks.

The polymer is a polymer of linear structure. In contrast, a polymer of non-linear structure is, for example, a polymer of branched structure, of starburst or grafted form, or the like.

The term "film-forming polymer" means a polymer capable of forming, by itself or in the presence of a film-forming auxiliary agent, a continuous film that adheres to a support, especially to keratin materials.

Preferentially, the polymer used in the composition according to the invention comprises no silicon atoms in its skeleton. The term "skeleton" means the main chain of the polymer, as opposed to the pendent side chains.

Advantageously, the block polymer comprises at least one first block and at least one second block that have different glass transition temperatures (Tg), the said first and second blocks being linked together via an intermediate block comprising at least one constituent monomer of the first block and at least one constituent monomer of the second block.

The term "at least one block" means one or more blocks.

It is pointed out that, in the text hereinabove and hereinbelow, the terms "first block"

and "second block" do not in any way condition the order of the said blocks in the structure of the polymer.

Preferably, the first and second blocks of the said block polymer are mutually incompatible.

The term "mutually incompatible blocks" means that the blend formed from the polymer corresponding to the first block and from the polymer corresponding to the second block is not miscible in the organic liquid that is the majority amount by weight of the organic liquid medium of the composition, at room temperature (25°C) and atmospheric pressure (10^5 Pa), for a polymer blend content of greater than or equal to 5% by weight, relative to the total weight of the blend (polymers and solvent), it being understood that:

i) the said polymers are present in the blend in a content such that the respective weight ratio ranges from 10/90 to 90/10, and that

ii) each of the polymers corresponding to the first and second blocks has an average (weight-average or number-average) molecular mass equal to that of the block polymer ± 15%.

In the case where the organic liquid medium comprises a mixture of organic liquids, and should two or more organic liquids be present in identical mass proportions, the said polymer blend is immiscible in at least one of them.

Needless to say, in the case where the

organic liquid medium comprises only one organic liquid, this liquid is the majority organic liquid.

Advantageously, the majority organic liquid of the composition is the organic solvent for polymerization of the block polymer or the majority organic solvent of the mixture of organic solvents for polymerization of the block polymer.

Preferably, the block polymer used in the composition according to the invention is not water-soluble, i.e. the polymer is not soluble in water or in a mixture of water and of linear or branched lower monoalcohols containing from 2 to 5 carbon atoms, for instance ethanol, isopropanol or n-propanol, without pH modification, at an active material content of at least 1% by weight, at room temperature (25°C).

Preferably, the block polymer used in the composition according to the invention is not an elastomer.

The term "non-elastomeric polymer" means a polymer which, when it is subjected to a constraint intended to pull it (for example by 30% relative to its initial length), does not return to a length substantially identical to its initial length when the constraint ceases.

More specifically, the term "non-elastomeric polymer" denotes a polymer with an instantaneous recovery R_i < 50% and a delayed recovery R_{2h} < 70% after having been subjected to a 30% elongation. Preferably,

R_i is < 30% and R_{2h} < 50%.

More specifically, the non-elastomeric nature of the polymer is determined according to the following protocol:

A polymer film is prepared by pouring a solution of the polymer in a Teflon-coated mould, followed by drying for 7 days in an environment conditioned at 23 ± 5°C and 50 ± 10% relative humidity.

A film about 100 µm thick is thus obtained, from which are cut rectangular specimens (for example using a punch) 15 mm wide and 80 mm long.

This sample is subjected to a tensile stress using a machine sold under the reference Zwick, under the same temperature and humidity conditions as for the drying.

The specimens are pulled at a speed of 50 mm/min and the distance between the jaws is 50 mm, which corresponds to the initial length (l_0) of the specimen.

The instantaneous recovery R_i is determined in the following manner:

- the specimen is pulled by 30% (ε_{max}), i.e. about 0.3 times its initial length (l_0)
- the constraint is released by applying a return speed equal to the tensile speed, i.e. 50 mm/min, and the residual elongation of the specimen is measured as a percentage, after returning to zero constraint (ε_i).

The percentage instantaneous recovery (R_i) is

given by the following formula:

$$R_i = (\varepsilon_{max} - \varepsilon_i)/\varepsilon_{max}) \times 100$$

To determine the delayed recovery, the percentage residual elongation of the specimen (ε_{2h}) is measured.

The percentage delayed recovery (R_{2h}) is given by the following formula:

$$R_{2h} = (\varepsilon_{max} - \varepsilon_{2h})/\varepsilon_{max}) \times 100$$

Purely as a guide, a polymer used according to one embodiment of the invention has an instantaneous recovery R_i of 10% and a delayed recovery R_{2h} of 30%.

Advantageously, the block polymer used in the compositions according to the invention has a polydispersity index I of greater than 2.

The polydispersity index I of the polymer is equal to the ratio of the weight-average mass Mw to the number-average mass Mn.

The weight-average molar mass (Mw) and number-average molar mass (Mn) are determined by gel permeation liquid chromatography (THF solvent, calibration curve established with linear polystyrene standards, refractometric detector).

The weight-average mass (Mw) of the polymer used in the compositions according to the invention is

preferably less than or equal to 300 000; it ranges, for example, from 35 000 to 200 000 and better still from 45 000 to 150 000.

The number-average mass (Mn) of the polymer used in the compositions according to the invention is preferably less than or equal to 70 000; it ranges, for example, from 10 000 to 60 000 and better still from 12 000 to 50 000.

The polydispersity index of the block polymer used in the compositions according to the invention is advantageously greater than 2, for example greater than 2 and less than or equal to 9, preferably greater than or equal to 2.5, for example ranging from 2.5 to 8, and better still greater than or equal to 2.8, especially from 2.8 to 6.

Each block of the polymer used in the composition according to the invention is derived from one type of monomer or from several different types of monomer.

This means that each block may consist of a homopolymer or a copolymer; this copolymer constituting the block may in turn be random or alternating.

Advantageously, the intermediate block comprising at least one constituent monomer of the first block and at least one constituent monomer of the second block of the polymer is a random polymer.

Preferably, the intermediate block is derived essentially from constituent monomers of the first

block and of the second block.

The term "essentially" means at least 85%, preferably at least 90%, better still 95% and even better still 100%.

Advantageously, the intermediate block has a glass transition temperature Tg that is between the glass transition temperatures of the first and second blocks.

The glass transition temperatures indicated for the first and second blocks may be theoretical Tg values determined from the theoretical Tg values of the constituent monomers of each of the blocks, which may be found in a reference manual such as the Polymer Handbook, 3rd Edition, 1989, John Wiley, according to the following relationship, known as Fox's law:

$$1/Tg = \sum_i (\varpi_i / Tg_i),$$

ϖ_i being the mass fraction of the monomer i in the block under consideration and Tg_i being the glass transition temperature of the homopolymer of the monomer i.

Unless otherwise indicated, the Tg values indicated for the first and second blocks in the present patent application are theoretical Tg values.

Advantageously, the first and second blocks of the polymer are such that the difference between the glass transition temperatures of the first and second

blocks is generally greater than 10°C, preferably greater than 20°C and better still greater than 30°C.

In particular, the first block may be chosen from:

a) a block with a Tg of greater than or equal to 40°C,

b) a block with a Tg of less than or equal to 20°C,

c) a block with a Tg of between 20 and 40°C,

and the second block can be chosen from a category a), b) or c) different from the first block.

In the present invention, the expression: "between ... and ..." is intended to denote a range of values for which the limits mentioned are excluded, and "from ... to ..." and "ranging from ... to ..." are intended to denote a range of values for which the limits are included.

a) Block with a Tg of greater than or equal to 40°C

The block with a Tg of greater than or equal to 40°C has, for example, a Tg ranging from 40 to 150°C, preferably greater than or equal to 50°C, for example ranging from 50°C to 120°C and better still greater than or equal to 60°C, for example ranging from 60°C to 120°C.

The block with a Tg of greater than or equal to 40°C may be a homopolymer or a copolymer.

In the case where this block is a homopolymer, it is derived from a monomer whose homopolymer has a glass transition temperature of greater than or equal to 40°C.

In the case where the first block is a copolymer, it may be totally or partially derived from one or more monomers, the nature and concentration of which are chosen such that the Tg of the resulting copolymer is greater than or equal to 40°C. The copolymer may comprise, for example:

- monomers whose homopolymer has a Tg of greater than or equal to 40°C, for example a Tg ranging from 40 to 150°C, preferably greater than or equal to 50°C, for example ranging from 50°C to 120°C and better still greater than or equal to 60°C, for example ranging from 60°C to 120°C, and
- monomers whose homopolymer has a Tg of less than 40°C, chosen from monomers whose homopolymer has a Tg of between 20 and 40°C and/or monomers whose homopolymer has a Tg of less than or equal to 20°C, for example a Tg ranging from -100 to 20°C, preferably less than 15°C, especially ranging from -80°C to 15°C and better still less than 10°C, for example ranging from -50°C to 0°C, as described later.

The monomers whose homopolymer has a glass transition temperature of greater than or equal to 40°C are chosen, preferably, from the following monomers, also known as the main monomers:

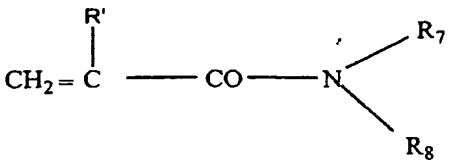
- methacrylates of formula $CH_2 = C(CH_3)-COOR_1$ in which R_1 represents a linear or branched unsubstituted alkyl group containing from 1 to 4 carbon atoms, such as a methyl, ethyl, propyl or isobutyl

group or R_1 represents a C_4 to C_{12} cycloalkyl group,

- acrylates of formula $CH_2 = CH\text{-}COOR_2$

in which R_2 represents a C_4 to C_{12} cycloalkyl group such as an isobornyl group or a tert-butyl group,

- (meth)acrylamides of formula:



in which R_7 and R_8, which may be identical or different, each represent a hydrogen atom or a linear or branched C_1 to C_{12} alkyl group such as an n-butyl, t-butyl, isopropyl, isohexyl, isooctyl or isononyl group; or R_7 represents H and R_8 represents a 1,1-dimethyl-3-oxobutyl group,

and R' denotes H or methyl. Examples of monomers that may be mentioned include N-butylacrylamide, N-t-butylacrylamide, N-isopropylacrylamide, N,N-dimethylacrylamide and N,N-dibutylacrylamide,

- and mixtures thereof.

Main monomers that are particularly preferred are methyl methacrylate, isobutyl (meth)acrylate and isobornyl (meth)acrylate, and mixtures thereof.

b) Block with a Tg of less than or equal to 20°C

The block with a Tg of less than or equal to 20°C has, for example, a Tg ranging from -100 to 20°C, preferably less than or equal to 15°C, especially ranging from -80°C to 15°C and better still less than

or equal to 10°C, for example ranging from -50°C to 0°C.

The block with a Tg of less than or equal to 20°C may be a homopolymer or a copolymer.

In the case where this block is a homopolymer, it is derived from monomers which are such that the homopolymers prepared from these monomers have glass transition temperatures of less than or equal to 20°C. This second block may be a homopolymer consisting of only one type of monomer (for which the Tg of the corresponding homopolymer is less than or equal to 20°C).

In the case where the block with a Tg of less than or equal to 20°C is a copolymer, it may be totally or partially derived from one or more monomers, the nature and concentration of which are chosen such that the Tg of the resulting copolymer is less than or equal to 20°C.

It may comprise, for example

- one or more monomers whose corresponding homopolymer has a Tg of less than or equal to 20°C, for example a Tg ranging from -100°C to 20°C, preferably less than 15°C, especially ranging from -80°C to 15°C and better still less than 10°C, for example ranging from -50°C to 0°C, and
- one or more monomers whose corresponding homopolymer has a Tg of greater than 20°C, such as monomers with a Tg of greater than or equal to 40°C, for example a Tg

ranging from 40 to 150°C, preferably greater than or equal to 50°C, for example ranging from 50°C to 120°C and better still greater than or equal to 60°C, for example ranging from 60°C to 120°C and/or monomers with a Tg of between 20 and 40°C, as described above.

Preferably, the block with a Tg of less than or equal to 20°C is a homopolymer.

The monomers whose homopolymer has a Tg of less than or equal to 20°C are preferably chosen from the following monomers, or main monomer:

- acrylates of formula $CH_2 = CHCOOR_3$,
R_3 representing a linear or branched C_1 to C_{12} unsubstituted alkyl group, with the exception of the tert-butyl group, in which one or more hetero atoms chosen from O, N and S is (are) optionally intercalated,
- methacrylates of formula $CH_2 = C(CH_3)-COOR_4$,
R_4 representing a linear or branched C_6 to C_{12} unsubstituted alkyl group, in which one or more hetero atoms chosen from O, N and S is (are) optionally intercalated;
- vinyl esters of formula $R_5-CO-O-CH = CH_2$
in which R_5 represents a linear or branched C_4 to C_{12} alkyl group,
- ethers of vinyl alcohol and of a C_4 to C_{12} alcohol,
- N-(C_4 to C_{12})alkyl acrylamides, such as N-octylacrylamide,
- and mixtures thereof.

The main monomers that are particularly preferred for the block with a Tg of less than or equal to 20°C are alkyl acrylates whose alkyl chain contains from 1 to 10 carbon atoms, with the exception of the tert-butyl group, such as methyl acrylate, isobutyl acrylate and 2-ethylhexyl acrylate, and mixtures thereof.

c) Block with a Tg of between 20 and 40°C

The block with a Tg of between 20 and 40°C may be a homopolymer or a copolymer.

In the case where this block is a homopolymer, it is derived from a monomer (or main monomer) whose homopolymer has a glass transition temperature of between 20 and 40°C.

The monomers whose homopolymer has a glass transition temperature of between 20 and 40°C are preferably chosen from n-butyl methacrylate, cyclodecyl acrylate, neopentyl acrylate and isodecylacrylamide, and mixtures thereof.

In the case where the block with a Tg of between 20 and 40°C is a copolymer, it is totally or partially derived from one or more monomers (or main monomer) whose nature and concentration are chosen such that the Tg of the resulting copolymer is between 20 and 40°C.

Advantageously, the block with a Tg of between 20 and 40°C is a copolymer totally or partially derived from:

- main monomers whose corresponding homopolymer has a Tg of greater than or equal to 40°C, for example a Tg ranging from 40°C to 150°C, preferably greater than or equal to 50°C, for example ranging from 50 to 120°C and better still greater than or equal to 60°C, for example ranging from 60°C to 120°C, as described above, and
- main monomers whose corresponding homopolymer has a Tg of less than or equal to 20°C, for example a Tg ranging from -100 to 20°C, preferably less than or equal to 15°C, especially ranging from -80°C to 15°C and better still less than or equal to 10°C, for example ranging from -50°C to 0°C, as described above,

the said monomers being chosen such that the Tg of the copolymer forming the first block is between 20 and 40°C.

Such main monomers are chosen, for example, from methyl methacrylate, isobornyl acrylate and methacrylate, butyl acrylate and 2-ethylhexyl acrylate, and mixtures thereof.

Preferably, the proportion of the second block with a Tg of less than or equal to 20°C ranges from 10% to 85%, better still from 20% to 70% and even better still from 20% to 50% by weight of the polymer.

Preferably, the polymer used in the compositions according to the invention is free of styrene.

However, each of the blocks may contain in small proportion at least one constituent monomer of

the other block.

Thus, the first block may contain at least one constituent monomer of the second block, and vice versa.

Each of the first and/or second blocks may comprise, in addition to the monomers indicated above, one or more other monomers known as additional monomers, which are different from the main monomers mentioned above.

The nature and amount of this or these additional monomer(s) are chosen such that the block in which they are present has the desired glass transition temperature.

This additional monomer is chosen, for example, from:

a) hydrophilic monomers such as:

- ethylenically unsaturated monomers comprising at least one carboxylic or sulfonic acid function, for instance:

acrylic acid, methacrylic acid, crotonic acid, maleic anhydride, itaconic acid, fumaric acid, maleic acid, acrylamidopropanesulfonic acid, vinylbenzoic acid, vinylphosphoric acid, and salts thereof,

- ethylenically unsaturated monomers comprising at least one tertiary amine function, for instance 2-vinylpyridine, 4-vinylpyridine, dimethylaminoethyl methacrylate, diethylaminoethyl methacrylate and dimethylaminopropylmethacrylamide, and salts thereof,

- methacrylates of formula $CH_2 = C(CH_3)-COOR_6$ in which R_6 represents a linear or branched alkyl group containing from 1 to 4 carbon atoms, such as a methyl, ethyl, propyl or isobutyl group, the said alkyl group being substituted with one or more substituents chosen from hydroxyl groups (for instance 2-hydroxypropyl methacrylate and 2-hydroxyethyl methacrylate) and halogen atoms (Cl, Br, I or F), such as trifluoroethyl methacrylate,

- methacrylates of formula $CH_2 = C(CH_3)-COOR_9$, R_9 representing a linear or branched C_6 to C_{12} alkyl group in which one or more hetero atoms chosen from O, N and S is (are) optionally intercalated, the said alkyl group being substituted with one or more substituents chosen from hydroxyl groups and halogen atoms (Cl, Br, I or F);

- acrylates of formula $CH_2 = CHCOOR_{10}$, R_{10} representing a linear or branched C_1 to C_{12} alkyl group substituted with one or more substituents chosen from hydroxyl groups and halogen atoms (Cl, Br, I or F), such as 2-hydroxypropyl acrylate and 2-hydroxyethyl acrylate, or R_{10} represents a C_1 to C_{12} alkyl-O-POE (polyoxyethylene) with repetition of the oxyethylene unit 5 to 30 times, for example methoxy-POE, or R_{10} represents a polyoxyethylenated group comprising from 5 to 30 ethylene oxide units

b) ethylenically unsaturated monomers comprising one or more silicon atoms, such as methacryloxypropyltri-

methoxysilane and methacryloxypropyltris(trimethylsiloxy)silane,

- and mixtures thereof.

Additional monomers that are particularly preferred are acrylic acid, methacrylic acid and trifluoroethyl methacrylate, and mixtures thereof.

According to one preferred embodiment, the polymer used in the compositions according to the invention is a non-silicone polymer, i.e. a polymer free of silicon atoms.

This or these additional monomer(s) generally represent(s) an amount of less than or equal to 30% by weight, for example from 1% to 30% by weight, preferably from 5% to 20% by weight and more preferably from 7% to 15% by weight, relative to the total weight of the first and/or second blocks.

Preferably, each of the first and second blocks comprises at least one monomer chosen from (meth)acrylic acid esters as defined above, and optionally one monomer chosen from (meth)acrylic acid, and mixtures thereof.

Advantageously, each of the first and second blocks is totally derived from at least one monomer chosen from (meth)acrylic acid esters as defined above, and optionally one monomer chosen from (meth)acrylic acid, and mixtures thereof.

The polymer used in the composition according to the invention may be obtained by free-radical

solution polymerization according to the following preparation process:

- a portion of the polymerization solvent is introduced into a suitable reactor and heated until the adequate temperature for the polymerization is reached (typically between 60 and 120°C),
- once this temperature is reached, the constituent monomers of the first block are introduced in the presence of a portion of the polymerization initiator,
- after a time T corresponding to a maximum degree of conversion of 90%, the constituent monomers of the second block and the rest of the initiator are introduced,
- the mixture is left to react for a time T' (ranging from 3 to 6 hours), after which the mixture is cooled to room temperature,
- the polymer dissolved in the polymerization solvent is obtained.

The term "polymerization solvent" means a solvent or a mixture of solvents. The polymerization solvent may be chosen especially from ethyl acetate, butyl acetate, alcohols such as isopropanol or ethanol, and aliphatic alkanes such as isododecane, and mixtures thereof. Preferably, the polymerization solvent is a mixture of butyl acetate and isopropanol or isododecane.

According to a first embodiment, the polymer used in the compositions according to the invention

comprises at least one (especially one) first block with a Tg of greater than or equal to 40°C, as described above in a) and at least one (especially one) second block with a Tg of less than or equal to 20°C, as described above in b).

Preferably, the first block with a Tg of greater than or equal to 40°C is a copolymer derived from monomers whose homopolymer has a glass transition temperature of greater than or equal to 40°C, such as the monomers described above.

Advantageously, the second block with a Tg of less than or equal to 20°C is a homopolymer, especially derived from monomers as described above.

Preferably, the proportion of the block with a Tg of greater than or equal to 40°C ranges from 20% to 90%, better still from 30% to 80% and even better still from 50% to 70% by weight of the polymer.

Preferably, the proportion of the block with a Tg of less than or equal to 20°C ranges from 5% to 75%, preferably from 15% to 50% and better still from 25% to 45% by weight of the polymer.

Thus, according to a first variant, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of greater than or equal to 40°C, for example having a Tg ranging from 70 to 110°C, which is a methyl methacrylate/acrylic acid copolymer,
- a second block with a Tg of less than or equal to

20°C, for example ranging from 0 to 20°C, which is a methyl acrylate homopolymer, and

- an intermediate block that is a methyl methacrylate/acrylic acid/methyl acrylate copolymer.

According to a second variant, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of greater than or equal to 40°C, for example ranging from 70 to 100°C, which is a methyl methacrylate/acrylic acid/trifluoroethyl methacrylate copolymer,
- a second block with a Tg of less than or equal to 20°C, for example ranging from 0 to 20°C, which is a methyl acrylate homopolymer, and
- an intermediate block that is a methyl methacrylate/acrylic acid/methyl acrylate/trifluoroethyl methacrylate random copolymer.

According to a third variant, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of greater than or equal to 40°C, for example ranging from 85 to 115°C, which is an isobornyl acrylate/isobutyl methacrylate copolymer,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -85 to -55°C, which is a 2-ethylhexyl acrylate homopolymer, and
- an intermediate block, which is an isobornyl acrylate/isobutyl methacrylate/2-ethylhexyl acrylate

random copolymer.

According to a fourth variant, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of greater than or equal to 40°C, for example ranging from 85 to 115°C, which is an isobornyl acrylate/methyl methacrylate copolymer,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -85 to -55°C, which is a 2-ethylhexyl acrylate homopolymer, and
- an intermediate block that is an isobornyl acrylate/methyl methacrylate/2-ethylhexyl acrylate random copolymer.

According to a fifth variant, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of greater than or equal to 40°C, for example ranging from 95 to 125°C, which is an isobornyl acrylate/isobornyl methacrylate copolymer,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -85 to -55°C, which is a 2-ethylhexyl acrylate homopolymer, and
- an intermediate block that is an isobornyl acrylate/isobornyl methacrylate/2-ethylhexyl acrylate random copolymer.

According to a sixth variant, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of greater than or equal to 40°C, for example ranging from 85 to 115°C, which is an isobornyl methacrylate/isobutyl methacrylate copolymer,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -35 to -5°C, which is an isobutyl acrylate homopolymer, and
- an intermediate block that is an isobornyl methacrylate/isobutyl methacrylate/isobutyl acrylate random copolymer.

According to a seventh variant, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of greater than or equal to 40°C, for example ranging from 95 to 125°C, which is an isobornyl acrylate/isobornyl methacrylate copolymer,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -35 to -5°C, which is an isobutyl acrylate homopolymer, and
- an intermediate block that is an isobornyl methacrylate/isobornyl methacrylate/isobutyl acrylate random copolymer.

According to an eighth variant, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of greater than or equal to 40°C, for example ranging from 60 to 90°C, which is an isobornyl acrylate/isobutyl methacrylate copolymer,
- a second block with a Tg of less than or equal to

20°C, for example ranging from -35 to -5°C, which is an isobutyl acrylate homopolymer, and

- an intermediate block that is an isobornyl acrylate/isobutyl methacrylate/isobutyl acrylate random copolymer.

According to a second embodiment, the polymer used in the compositions according to the invention comprises at least one (especially one) first block with a glass transition temperature (Tg) of between 20 and 40°C, in accordance with the blocks described in c) and at least one (especially one) second block with a glass transition temperature of less than or equal to 20°C, as described above in b) or a glass transition temperature of greater than or equal to 40°C, as described in a) above.

Preferably, the proportion of the first block with a Tg of between 20 and 40°C ranges from 10% to 85%, better still from 30% to 80% and even better still from 50% to 70% by weight of the polymer.

When the second block is a block with a Tg of greater than or equal to 40°C, it is preferably present in a proportion ranging from 10% to 85%, better still from 20% to 70% and even better still from 30% to 70% by weight of the polymer.

When the second block is a block with a Tg of less than or equal to 20°C, it is preferably present in a proportion ranging from 10% to 85%, better still from 20% to 70% and even better still from 20% to 50% by

weight of the polymer.

Preferably, the first block with a Tg of between 20 and 40°C is a copolymer derived from monomers which are such that the corresponding homopolymer has a Tg of greater than or equal to 40°C, and from monomers which are such that the corresponding homopolymer has a Tg of less than or equal to 20°C.

Advantageously, the second block with a Tg of less than or equal to 20°C or with a Tg of greater than or equal to 40°C is a homopolymer.

Thus, according to a first variant of this second embodiment, the polymer used in the composition according to the invention may comprise:

- a first block with a Tg of between 20 and 40°C, for example with a Tg of 25 to 39°C, which is a copolymer comprising at least one methyl acrylate monomer, at least one methyl methacrylate monomer and at least one acrylic acid monomer,
- a second block with a Tg of greater than or equal to 40°C, for example ranging from 85 to 125°C, which is a homopolymer composed of methyl methacrylate monomers, and
- an intermediate block comprising at least one methyl acrylate or methyl methacrylate monomer, and
- an intermediate block comprising methyl methacrylate, at least one acrylic acid monomer and at least one methyl acrylate monomer.

According to a second variant of this second

embodiment, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of between 20 and 40°C, for example with a Tg of 21 to 39°C, which is a copolymer comprising isobornyl acrylate/isobutyl methacrylate/2-ethylhexyl acrylate,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -65 to -35°C, which is a methyl methacrylate homopolymer, and
- an intermediate block that is an isobornyl acrylate/isobutyl methacrylate/2-ethylhexyl acrylate random copolymer.

According to a third variant of this second embodiment, the polymer used in the compositions according to the invention may comprise:

- a first block with a Tg of between 20 and 40°C, for example with a Tg from 21 to 39°C, which is an isobornyl acrylate/methyl acrylate/acrylic acid copolymer,
- a second block with a Tg of greater than or equal to 40°C, for example ranging from 85 to 115°C, which is an isobornyl acrylate homopolymer, and
- an intermediate block that is an isobornyl acrylate/methyl acrylate/acrylic acid random copolymer.

The block polymer may be present in the composition according to the invention in a content ranging from 0.1% to 60% by weight, preferably ranging from 0.5% to 50% by weight and more preferably ranging

from 1% to 40% by weight, relative to the total weight of the composition.

According to one particularly preferred embodiment, the organic liquid medium of the composition contains at least one organic liquid that is the or one of the organic solvent(s) for polymerization of the block polymer as described above. Advantageously, the said organic polymerization solvent is the organic liquid that is present in majority amount by weight in the organic liquid medium of the cosmetic composition.

The cosmetic composition according to the invention comprises a cosmetically acceptable medium, i.e. a medium that is compatible with keratin materials, for instance the skin, the lips, the hair, the eyelashes, the eyebrows and the nails.

The composition according to the invention may comprise at least one volatile oil.

The term "oil" means any non-aqueous medium that is liquid at room temperature (25°C) and atmospheric pressure (760 mmHg), which is compatible with application to the skin, mucous membranes (lips) and/or the integuments (nails, eyelashes, eyebrows or hair).

The term "volatile oil" means any non-aqueous medium capable of evaporating from the skin or the lips in less than one hour, especially having a vapour pressure, at room temperature and atmospheric pressure,

ranging from 10^{-3} to 300 mmHg (0.13 Pa to 40 000 Pa).

According to the invention, one or more volatile oils may be used.

These oils may be hydrocarbon-based oils or silicone oils optionally comprising alkyl or alkoxy groups that are pendent or at the end of a silicone chain.

The term "hydrocarbon-based oil" means an oil essentially formed from, or even consisting of, carbon and hydrogen atoms, and possibly oxygen or nitrogen atoms, and containing no silicon or fluorine atoms. It may contain alcohol, ester, ether, carboxylic acid, amine and/or amide groups.

As volatile silicone oils that may be used in the invention, mention may be made of linear or cyclic silicones containing from 2 to 7 silicon atoms, these silicones optionally comprising alkyl or alkoxy groups containing from 1 to 10 carbon atoms. As volatile silicone oils that may be used in the invention, mention may be made especially of octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane, heptamethylhexyltrisiloxane, heptamethyloctyltrisiloxane, octamethyltrisiloxane and decamethyltetrasiloxane, and mixtures thereof.

As other volatile oils that may be used in the invention, C_8-C_{16}, for instance isododecane, isodecane and isohexadecane and, for example, the oils sold under the trade names Isopar and Permethyl, and

especially isododecane (Permethyl 99 A), are especially preferred.

The volatile oil may be present in the composition according to the invention in a content ranging from 1% to 70% by weight, preferably ranging from 5% to 50% by weight and preferentially ranging from 10% to 35% by weight, relative to the total weight of the composition.

The composition according to the invention may comprise a non-volatile oil.

The term "non-volatile oil" means an oil that is capable of remaining on the skin at room temperature (25°C) and atmospheric pressure for at least one hour and especially having a non-zero vapour pressure, at room temperature (25°C) and atmospheric pressure, of less than 0.01 mmHg (1.33 Pa).

The non-volatile oil may be chosen from hydrocarbon-based and silicone non-volatile oils.

The non-volatile oil may be chosen from polar or apolar non-volatile oils and polar non-volatile oils, and mixtures thereof.

The non-volatile oil may be present in the composition according to the invention in a content ranging from 1% to 80% by weight, preferably ranging from 5% to 60% by weight, and preferentially ranging from 10% to 50% by weight, especially ranging from 20% to 50% by weight, relative to the total weight of the composition.

As non-volatile oil that may be used in the invention, mention may be made of:

- non-volatile hydrocarbon-based oils such as liquid paraffin (or petroleum jelly), squalane, hydrogenated polyisobutylene (parleam oil), perhydrosqualene, mink oil, turtle oil, soybean oil, sweet almond oil, beauty-leaf oil, palm oil, grapeseed oil, sesame seed oil, maize oil, arara oil, rapeseed oil, sunflower oil, cotton seed oil, apricot oil, castor oil, avocado oil, jojoba oil, olive oil or cereal germ oil; lanolic acid, oleic acid, lauric acid or stearic acid esters; fatty esters, especially of C_{12}-C_{36}, such as isopropyl myristate, isopropyl palmitate, butyl stearate, hexyl laurate, diisopropyl adipate, isononyl isononanoate, 2-ethylhexyl palmitate, 2-hexyldecyl laurate, 2-octyl-decyl palmitate, 2-octyldodecyl myristate or lactate, bis(2-ethylhexyl) succinate, diisostearyl malate, and glyceryl or diglyceryl triisostearate; higher fatty acids, especially of C_{14}-C_{22}, such as myristic acid, palmitic acid, stearic acid, behenic acid, oleic acid, linoleic acid, linolenic acid or isostearic acid; higher fatty alcohols, especially of C_{16}-C_{22}, such as cetanol, oleyl alcohol, linoleyl alcohol, linolenyl alcohol, isostearyl alcohol or octyldodecanol; and mixtures thereof;

- non-volatile silicone oils such as non-volatile polydimethylsiloxanes (PDMSs); polydimethylsiloxanes comprising alkyl, alkoxy or phenyl groups, pendent or

at the end of a silicone chain, these groups containing from 2 to 24 carbon atoms; phenyl silicones, for instance phenyl trimethicones, phenyl dimethicones, phenyltrimethylsiloxydiphenylsiloxanes, diphenyl dimethicones and diphenylmethyldiphenyltrisiloxanes; polysiloxanes modified with fatty acids (especially of C_8-C_{20}), fatty alcohols (especially of C_8-C_{20}) or polyoxyalkylenes (especially polyoxyethylene and/or polyoxypropylene); amino silicones; silicones containing hydroxyl groups; fluoro silicones comprising a fluoro group that is pendent or at the end of a silicone chain, containing from 1 to 12 carbon atoms, some or all of the hydrogens of which are replaced with fluorine atoms; and mixtures thereof.

The composition according to the invention may also comprise at least some fatty substances that are solid at room temperature, chosen especially from waxes, pasty fatty substances and gums, and mixtures thereof. These fatty substances may be of animal, plant, mineral or synthetic origin.

For the purposes of the present invention, the term "wax" means a lipophilic compound that is solid at room temperature (25°C), which undergoes a reversible solid/liquid change of state, and which has a melting point of greater than or equal to 30°C, which may be up to 120°C.

The melting point of the wax may be measured using a differential scanning calorimeter (DSC), for

example the calorimeter sold under the name DSC 30 by the company Mettler.

The waxes may be hydrocarbon-based waxes, fluoro waxes and/or silicone waxes and may be of plant, mineral, animal and/or synthetic origin. In particular, the waxes have a melting point of greater than 25°C and better still greater than 45°C.

As waxes that may be used in the composition of the invention, mention may be made of beeswax, carnauba wax or candelilla wax, paraffin, microcrystalline waxes, ceresin or ozokerite, synthetic waxes, for instance polyethylene waxes or Fischer-Tropsch waxes, and silicone waxes, for instance alkyl or alkoxy dimethicones containing from 16 to 45 carbon atoms.

The gums are generally polydimethylsiloxanes (PDMSs) of high molecular weight or cellulose gums or polysaccharides, and the pasty substances are generally hydrocarbon-based compounds, for instance lanolins and derivatives thereof, or PDMSs.

The nature and amount of the solid substances depend on the desired mechanical properties and textures. As a guide, the composition may contain from 0.1% to 50% by weight and better still from 1% to 30% by weight of waxes, relative to the total weight of the composition.

The composition may thus comprise water or a mixture of water and hydrophilic organic solvent(s), for instance alcohols and especially linear or branched

lower monoalcohols containing from 2 to 5 carbon atoms, for instance ethanol, isopropanol or n-propanol, and polyols, for instance glycerol, diglycerol, propylene glycol, sorbitol or pentylene glycol, and polyethylene glycols, or hydrophilic C_2 ethers and C_2-C_4 aldehydes.

The water or the mixture of water and hydrophilic organic solvents may be present in the composition according to the invention in a content ranging from 0.1% to 99% by weight and preferably from 10% to 80% by weight, relative to the total weight of the composition.

The composition may comprise, besides the block polymer described above according to the invention, an additional polymer such as a film-forming polymer. According to the present invention, the term "film-forming polymer" means a polymer that is capable of forming, by itself or in the presence of an auxiliary film-forming agent, a continuous film that adheres to a support, especially to keratin materials.

Among the film-forming polymers that may be used in the composition of the present invention, mention may be made of synthetic polymers, of free-radical type or of polycondensate type, polymers of natural origin, and mixtures thereof. Film-forming polymers that may be mentioned in particular include acrylic polymers, polyurethanes, polyesters, polyamides, polyureas and cellulose-based polymers, for instance nitrocellulose.

The composition according to the invention may also comprise one or more dyestuffs chosen from water-soluble dyes and pulverulent dyestuffs, for instance pigments, nacres and flakes that are well known to those skilled in the art. The dyestuffs may be present in the composition in a content ranging from 0.01% to 50% by weight and preferably from 0.01% to 30% by weight, relative to the weight of the composition.

The term "pigments" should be understood as meaning white or coloured, mineral or organic particles of any shape, which are insoluble in the physiological medium and which are intended to colour the composition.

The term "nacres" should be understood as meaning iridescent particles of any shape, produced especially by certain molluscs in their shell, or alternatively synthesized.

The pigments may be white or coloured, and mineral and/or organic. Among the mineral pigments that may be mentioned are titanium dioxide, optionally surface-treated, zirconium oxide or cerium oxide, and also zinc oxide, iron oxide (black, yellow or red) or chromium oxide, manganese violet, ultramarine blue, chromium hydrate and ferric blue, and metal powders, for instance aluminium powder or copper powder.

Among the organic pigments that may be mentioned are carbon black, pigments of D & C type, and lakes based on cochineal carmine or on barium,

strontium, calcium or aluminium.

Mention may also be made of pigments with an effect, such as particles comprising a natural or synthetic, organic or mineral substrate, for example glass, acrylic resins, polyester, polyurethane, polyethylene terephthalate, ceramics or aluminas, the said substrate being uncoated or coated with metal substances, for instance aluminium, gold, silver, platinum, copper or bronze, or with metal oxides, for instance titanium dioxide, iron oxide or chromium oxide, and mixtures thereof.

The nacreous pigments may be chosen from white nacreous pigments such as mica coated with titanium or with bismuth oxychloride, coloured nacreous pigments such as titanium mica coated with iron oxides, titanium mica coated especially with ferric blue or chromium oxide, titanium mica coated with an organic pigment of the abovementioned type and also nacreous pigments based on bismuth oxychloride. Interference pigments, especially liquid-crystal pigments or multilayer pigments, may also be used.

The water-soluble dyes are, for example, beetroot juice or methylene blue.

The composition according to the invention may comprise at least one filler, especially in a content ranging from 0.01% to 50% by weight and preferably ranging from 0.01% to 30% by weight, relative to the total weight of the composition. The

term "fillers" should be understood as meaning colourless or white, mineral or synthetic particles of any shape, which are insoluble in the medium of the composition, irrespective of the temperature at which the composition is manufactured. These fillers serve especially to modify the rheology or the texture of the composition.

The fillers may be mineral or organic in any form, platelet-shaped, spherical or oblong, irrespective of the crystallographic form (for example leaflet, cubic, hexagonal, orthorhombic, etc.). Mention may be made of talc, mica, silica, kaolin, polyamide (Nylon®) powders (Orgasol® from Atochem), poly-β-alanine powder and polyethylene powder, powders of tetrafluoroethylene polymers (Teflon®), lauroyllysine, starch, boron nitride, hollow polymer microspheres such as those of polyvinylidene chloride/acrylonitrile, for instance Exapancel® (Nobel Industrie) or acrylic acid copolymers (Polytrap® from the company Dow Corning) and silicone resin microbeads (for example Tospearls® from Toshiba), elastomeric polyorganosiloxane particles, precipitated calcium carbonate, magnesium carbonate, magnesium hydrocarbonate, hydroxyapatite, hollow silica microspheres (Silica Beads® from Maprecos), glass or ceramic microcapsules, and metal soaps derived from organic carboxylic acids containing from 8 to 22 carbon atoms and preferably from 12 to 18 carbon atoms, for example zinc, magnesium or lithium stearate, zinc

laurate or magnesium myristate.

The composition according to the invention may also contain ingredients commonly used in cosmetics, such as vitamins, thickeners, trace elements, softeners, sequestering agents, fragrances, acidifying or basifying agents, preserving agents, sunscreens, surfactants, antioxidants, or mixtures thereof.

Needless to say, a person skilled in the art will take care to select this or these optional additional compound(s), and/or the amount thereof, such that the advantageous properties of the corresponding composition according to the invention are not, or are not substantially, adversely affected by the envisaged addition.

The composition according to the invention may especially be in the form of a suspension, a dispersion, a solution, a gel, an emulsion, especially an oil-in-water (O/W) emulsion or a water-in-oil (W/O) emulsion, in the form of a cream, a stick, a paste, especially a soft paste (especially a paste with a dynamic viscosity at 25°C of about from 0.1 to 40 Pa.s under a shear rate of 200 s^{-1}, after measurement for 10 minutes in cone/plate geometry). The composition may be anhydrous; for example, it may be an anhydrous stick or paste. The composition may be a leave-in composition.

A person skilled in the art may select the appropriate galenical form, and also the method for

preparing it, on the basis of his general knowledge, taking into account firstly the nature of the constituents used, especially their solubility in the support, and secondly the intended application for the composition.

According to another aspect, the invention also relates to a cosmetic assembly comprising:

i) a container delimiting at least one compartment, the said container being closed by a closing member; and

ii) a composition placed inside the said compartment, the composition being in accordance with any one of the preceding claims.

The container may be in any adequate form. It may especially be in the form of a bottle, a tube, a case, a box or a carton.

The closing member may be in the form of a removable stopper, a lid, or a capsule, especially of the type comprising a body attached to the container and a cover cap articulated on the body. It may also be in the form of a member for selectively closing the container, especially a flap valve.

The container may be combined with an applicator. The applicator may be in the form of a block of foam or of elastomer, a felt or a spatula. The applicator may be free (tuft or sponge) or securely fastened to a rod borne by the closing member, as

described, for example, in patent US 5 492 426. The applicator may be securely fastened to the container, as described, for example, in patent FR 2 761 959.

The product may be contained directly in the container, or indirectly. By way of example, the product may be arranged on an impregnated support, especially in the form of a wipe or a pad, and arranged (individually or in plurality) in a box or in a sachet. Such a support incorporating the product is described, for example, in patent application WO 01/03538.

The closing member may be coupled to the container by screwing. Alternatively, the coupling between the closing member and the container is done other than by screwing, especially via a bayonet mechanism, by click-fastening, gripping or by magnetic attraction. The term "click-fastening" in particular means any system involving the crossing of a bead or cord of material by elastic deformation of a portion, especially of the closing member, followed by return to the elastically unconstrained position of the said portion after the crossing of the bead or cord.

The container may be at least partially made of thermoplastic material. Examples of thermoplastic materials that may be mentioned include polypropylene or polyethylene.

Alternatively, the container is made of non-thermoplastic material, especially glass or metal (or alloy).

The container may have rigid walls or deformable walls, especially in the form of a tube or a tubular bottle.

The container may comprise means for distributing or facilitating the distribution of the composition. By way of example, the container may have deformable walls so as to allow the composition to exit in response to a positive pressure inside the container, this positive pressure being caused by elastic (or non-elastic) squeezing of the walls of the container. Alternatively, especially when the product is in the form of a stick, the product may be driven out by a piston mechanism. Still in the case of a stick, especially of makeup product (lipstick, foundation, etc.), the container may comprise a mechanism, especially a rack mechanism, a threaded-rod mechanism or a helical groove mechanism, and may be capable of moving a stick in the direction of the said aperture. Such a mechanism is described, for example, in patent FR 2 806 273 or in patent FR 2 775 566. Such a mechanism for a liquid product is described in patent FR 2 727 609.

The container may consist of a carton with a base delimiting at least one housing containing the composition, and a lid, especially articulated on the base, and capable of at least partially covering the said base. Such a carton is described, for example, in patent application WO 03/018423 or in patent

FR 2 791 042.

The container may be equipped with a drainer arranged in the region of the aperture of the container. Such a drainer makes it possible to wipe the applicator and possibly the rod to which it may be securely fastened. Such a drainer is described, for example, in patent FR 2 792 618.

The composition may be at atmospheric pressure inside the container (at room temperature).

The content of the patents or patent applications mentioned above are incorporated by reference into the present patent application.

The invention is illustrated in greater detail by the examples described below.

Example 1:

Preparation of a poly(isobornyl acrylate/isobutyl methacrylate/2-ethylhexyl acrylate) polymer

100 g of isododecane are introduced into a 1 litre reactor and the temperature is then increased so as to pass from room temperature (25°C) to 90°C over 1 hour.

120 g of isobornyl acrylate, 90 g of isobutyl methacrylate, 110 g of isododecane and 1.8 g of 2,5-bis(2-ethylhexanoylperoxy)-2,5-dimethylhexane (Trigonox® 141 from Akzo Nobel) are then added, at 90°C and over 1 hour.

The mixture is maintained at 90°C for 1 hour 30 minutes.

90 g of 2-ethylhexyl acrylate, 90 g of isododecane and 1.2 g of 2,5-bis(2-ethylhexanoyl-peroxy)-2,5-dimethylhexane are then introduced into the above mixture, still at 90°C and over 30 minutes.

The mixture is maintained at 90°C for 3 hours and is then cooled.

A solution containing 50% polymer active material in isododecane is obtained.

A polymer comprising a poly(isobornyl acrylate/isobutyl methacrylate) first block with a Tg of 80°C, a poly-2-ethylhexyl acrylate second block with a Tg of -70°C and an intermediate block that is an isobornyl acrylate/isobutyl methacrylate/2-ethylhexyl acrylate random polymer is obtained.

This polymer has a weight-average mass of 77 000 and a number-average mass of 19 000, i.e. a polydispersity index I of 4.05.

Example 2:

Preparation of a poly(isobornyl acrylate/isobornyl methacrylate/2-ethylhexyl acrylate) polymer

100 g of isododecane are introduced into a 1 litre reactor and the temperature is then increased so as to pass from room temperature (25°C) to 90°C over 1 hour.

105 g of isobornyl acrylate, 105 g of isobornyl methacrylate, 110 g of isododecane and 1.8 g of 2,5-bis(2-ethylhexanoylperoxy)-2,5-dimethylhexane (Trigonox® 141 from Akzo Nobel) are then added, at 90°C

and over 1 hour.

The mixture is maintained at 90°C for 1 hour 30 minutes.

90 g of 2-ethylhexyl acrylate, 90 g of isododecane and 1.2 g of 2,5-bis(2-ethylhexanoyl-peroxy)-2,5-dimethylhexane are then introduced into the above mixture, still at 90°C and over 30 minutes.

The mixture is maintained at 90°C for 3 hours and is then cooled.

A solution containing 50% polymer active material in isododecane is obtained.

A polymer comprising a poly(isobornyl acrylate/isobornyl methacrylate) first block with a Tg of 110°C, a poly-2-ethylhexyl acrylate second block with a Tg of -70°C and an intermediate block that is an isobornyl acrylate/isobornyl methacrylate/2-ethylhexyl acrylate random polymer is obtained.

This polymer has a weight-average mass of 103 900 and a number-average mass of 21 300, i.e. a polydispersity index I of 4.89.

Examples 3 and 4:

A lipstick having the composition below was prepared:

Polymer of Example 1 or 2 at 50% by weight in isododecane	65 g
Octyldodecanol	11.34 g

Polyethylene wax (Performalene 500 polyethylene from New Phase Technologies)	13 g
Mixture of C30-C50 fatty alcohols and of C30-C50 hydrocarbon (80/20) (Performacol 550 from New Phase Technologies)	2 g
Pigments	8.66 g

A ground pigmentary material is made from the pigments in the octyldodecanol, by milling the mixture 3 times in a three-roll mill.

The mixture of waxes and of ground pigmentary material is melted at 100°C with stirring using a Rayneri mixer, and stirring is continued for 40 minutes. The temperature of the mixture is then allowed to fall to 80°C, and the polymer mixed with isododecane is added. Stirring is continued for 15 minutes and the mixture is then cast into a mould heated to 42°C, and then cooled in a freezer at -18°C for 30 minutes.

The sticks obtained are packaged in a packaging article.

The lipstick makes it possible to obtain a makeup result that shows good transfer resistance and staying properties.

The resistive index of the lipstick obtained is measured according to the measuring protocol described previously.

The lipsticks of Examples 3 and 4 form, respectively, a film having a resistive index of 100%.

Example 5:

A lipstick having the composition below was prepared:

Polymer of Example 1 at 50% by weight in isododecane	50 g
Octyldodecanol	11.34 g
Polyethylene wax (Performalene 500 polyethylene from New Phase Technologies)	13 g
Mixture of C30-C50 fatty alcohols and of C30-C50 hydrocarbon (80/20) (Performacol 550 from New Phase Technologies)	2 g
Pigments	8.66 g
Isododecane	15 g

This lipstick forms a film with a resistive index equal to 98.6%, measured according to the protocol described previously.

Example 6:

A lipstick having the composition below was prepared:

Polymer of Example 1 at 50% by weight in isododecane	30 g
Octyldodecanol	11.34 g
Polyethylene wax (Performalene 500 polyethylene from New Phase Technologies)	15 g
Mixture of C30-C50 fatty alcohols and of C30-C50 hydrocarbon (80/20) (Performacol 550 from New Phase Technologies)	2 g

Pigments	8.66 g
Isododecane	35 g

This lipstick forms a film with a resistive index equal to 98.6%, measured according to the protocol described previously.